

## IWBAT

- define simple interest
- understand simple interest and the formula  
 $I = prt$
- practice computing a balance in an account incorporating interest.

## Banking: Simple Interest

**Interest** - a payment for borrowing money over time

$P$  = the amount borrowed

$R$  = % of the amount borrowed charged to the borrower

$T$  = How long the borrowing period is

**Simple interest** -

Calculated only on the amount borrowed

$$I = prt$$

$$I = P * R * T$$

$$P = \frac{I}{RT} \quad R = \frac{I}{PT}$$

$$T = \frac{I}{PR}$$

Total value =  $p + I$   
(Future value)

$$I = FV - P$$

IWBAT define simple interest, understand simple interest and the formula  $I = prt$ , and practice computing a balance in an account incorporating interest.

## Banking: Simple Interest

Five year old Johanna deposits \$100 of Christmas money in a savings account which pays 3% simple interest. With no further deposits or withdrawals, how much will her account be worth at Christmas when she is 18?

FV \$

$I =$

$P = \$100$

$R = 3\%, .03$

$T = 18 - 5 = 13y$

$$I = P \cdot R \cdot T$$
$$I = \$100 (.03) (13) = \$39$$

$$FV = P + I = \$100 + \$39 = \underline{\underline{\$139}}$$

IWBAT define simple interest, understand simple interest and the formula  $I = prt$ , and practice computing a balance in an account incorporating interest.

## Banking: Simple Interest

Compounding period

annually

semiannually

quarterly

monthly

weekly

daily

1

2

4

12

52

365

how often interest is calculated, and added to the account (per yr)

IWBAT define simple interest, understand simple interest and the formula  $I = prt$ , and practice computing a balance in an account incorporating interest.

## Banking: Simple Interest

Jessy deposits \$300 in a savings account which pays 3% simple interest compounded monthly.

With no further deposits or withdrawals, how much will the account be worth in eight years? \$FV

$I =$

$P = \$300$

$R = 3\%, .03$

$T = 8y$

$C = 12$

$$I = \$300 \left( \frac{.03}{12} \right) (8y \cdot 12^{m/y}) = \$72$$

$$FV = I + P = \$72 + \$300 = \$372$$

$$\frac{3}{\frac{1}{4}} = 3y \cdot \frac{4y}{1m} = 12y^2/m$$

Periodic Interest Rate

$$\frac{R}{C} \quad \frac{r}{n}$$

$n =$  number of compounding periods per year

IWBAT define simple interest, understand simple interest and the formula  $I = prt$ , and practice computing a balance in an account incorporating interest.

## Banking: Simple Interest

**Define simple interest in your own words.**

Simple interest is calculated only on the amount borrowed. It is a fee added to the account of the borrower.

IWBAT define simple interest, understand simple interest and the formula  $I = prt$ , and practice computing a balance in an account incorporating interest.

## Banking: Simple Interest

### Practice: 4.1.2

	Simple Interest Rate $R$	Frequency of Simple Interest Calculation	Number of $C$ Periods per Year	Periodic Interest Rate $\frac{R}{C}$	Number of Years $Y$	Total Number of Periods $C \cdot Y$
Example	3.5%	Annually	1	3.5%	5	5
1. CD A	4.4%	Quarterly	4	1.1%	12	48
2. CD B	7.2%	Monthly	12	0.6%	8	96
3. CD C	5.6%	Semiannually	2	2.8%	15	30

$\div \rightarrow \leftarrow \times$

IWBAT define simple interest, understand simple interest and the formula  $I = prt$ , and practice computing a balance in an account incorporating interest.

## Banking: Simple Interest

### Practice: 4.1.2

	Principal $P$	Periodic Interest Rate $R$	Number of $T$ Periods	Interest Earned $P \cdot R \cdot T = I$	Future Value of Principal $P + I$
Example	\$8000	0.4%	60	\$1920	\$9920
4. Deposit A	\$6000	2.4%	14	\$2016	\$8016
5. Deposit B	\$5000	1.3%	16	\$1872	\$6872
6. Deposit C	\$7000	0.5%	72	\$2520	\$9520

$$\frac{2.4\%}{100} = 0.024 \quad 6000 \cdot \frac{2.4}{100} \cdot 14 =$$

IWBAT define simple interest, understand simple interest and the formula  $I = prt$ , and practice computing a balance in an account incorporating interest.



## Calculate simple interest

9/29/17

Justina opened a savings account with a deposit of \$1,000. Saving for college, she left the money untouched from the time she was 12 until she was 18. This account paid 3.6% annual simple interest compounded quarterly. How much did Justina have in this account for college when she was ready to withdraw the funds?

I \$

P \$1000

R 3.6%, 0.036

T 6y

C 4

FV = P + I

FV\$

$$I = \$1000(0.036)(6) = \$216$$

$$FV = \$216 + \$1000 = \underline{\underline{\$1216}}$$

## Banking: Exponential Growth

IWBAT evaluate exponential expressions and define the concepts of exponential growth and exponential decay.

## Banking: Exponential Growth

### Review of exponents

$$f(x) = b^x$$

~~b~~ · ~~f~~ · X      b · b · b · ... · b  
X

## Banking: Exponential Growth

$$f(x) = a * b^x$$

$a$  = initial amount (principal)

$b$  = rate of change

$x$  = time (number of periods)

*Gets larger*

**Growth:  $b > 1$**

Evaluate:

$$a = 500$$

$$b = 1.05$$

$$x = 24$$

$$f(24) = 500(1.05)^{24}$$

$$f(24) = 1612.54$$

$b - 1$   
 $1.05 - 1 = .05$   
5%

*Gets smaller*

**Decay:  $0 < b < 1$**

Evaluate:

$$a = 500$$

$$b = 0.65$$

$$x = 24$$

$$f(24) = 500(0.65)^{24}$$

$$f(24) = 0.0161$$

$0.65 - 1 = -.35$   
-35%

IWBAT evaluate exponential expressions and define the concepts of exponential growth and exponential decay.

## Banking: Exponential Growth

## Rice problem

Linear growth:

Day 1: 1 grain

Day 2: 2 grains

Day 3: 3 grains ...

Exponential growth:

Day 1: 1 grain

Day 2: 2 grains

Day 3: 4 grains ...

On day 30, how many grains of rice do you have?

Day 30 = 30 grains

60?

$$f(30) = 1(2)^{30}$$

$$f(30) = 107374,824$$

$$f(64) = 1 \cdot (2)^{64}$$

18446744070,000,000,000,000<sup>b</sup>  
gt, gd, tr, b, m, t, ooo

$$x^2 - 1 = \text{bcard}$$

IWBAT evaluate exponential expressions and define the concepts of exponential growth and exponential decay.

## Banking: Compound Interest

Evaluate the exponential expressions

$$f(x) = 2^x$$

$$g(x) = \left(\frac{1}{2}\right)^x$$

$$f(2) = 2^2 = 4$$

$$g(2) = \left(\frac{1}{2}\right)^2 = \left(\frac{1^2}{2^2}\right) = \frac{1}{4}$$

$$f(8) = 2^8 = 256 \quad g(8) = \left(\frac{1}{2}\right)^8 = \frac{1}{256}$$

$$f(2) * g(2) = 4 \cdot \frac{1}{4}$$

$$2^2 \cdot \left(\frac{1}{2}\right)^2 = 1$$

$$2^x \cdot \frac{1^x}{2^x}$$

### Banking: Exponential Growth

$$f(t) = P\left(1 + \frac{r}{n}\right)^{nt}$$

Justina

$$P = \$1000$$

$$R = 3.6\%, 0.036$$

$$n = 4$$

$$t = 6y$$

$$f(6) = \$1000 \left(1 + \frac{0.036}{4}\right)^{(4 \cdot 6)}$$

$$f(6) = \$1000 (1 + 0.009)^{24}$$

$$f(6) = \$1239.90$$

As  $n \Rightarrow \infty$ ,

$$f(t) = Pe^{rt}$$

$$f(x) = a * e^x$$

Justina

$$f(6) = 1000 e^{(0.036 \cdot 6)}$$

$$f(6) = \$1241.10$$

IWBAT evaluate exponential expressions and define the concepts of exponential growth and exponential decay.

### Banking: Exponential Growth

$$f(1), f(2), f(3)$$

Practice: 4.2.2

IWBAT evaluate exponential expressions and define the concepts of exponential growth and exponential decay.



## IWBAT

- practice using the formula  $FV = P(1 + r/n)^{nt}$  and
- explore continuous compounding as an example of exponential growth.

## 4.3 Compound Interest

Define compound interest for a general number of periods.

$$f(t) = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$P = \$2,500$$

$$r = 4\%$$

$$t = 10 \text{ yr.}$$

$$n = \underline{1}, \underline{4}, \underline{12}, \underline{365}$$

$$FV = P\left(1 + \frac{r}{n}\right)^{nt}$$

$$FV = \$2500\left(1 + \frac{.04}{1}\right)^{(1 \cdot 10)}$$

$$FV = \$3700.61$$

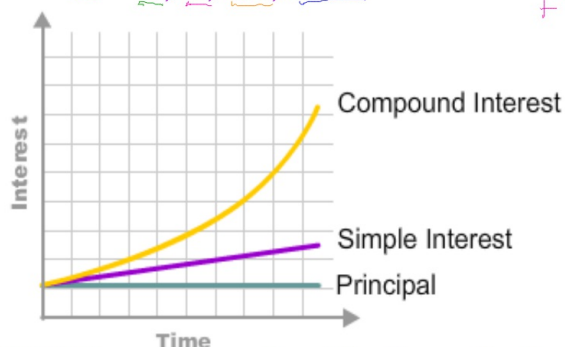
$$FV = \$2500\left(1 + \frac{.04}{4}\right)^{(4 \cdot 10)}$$

$$FV = \$3722.16$$

$$FV = \$2500\left(1 + \frac{.04}{12}\right)^{(12 \cdot 10)}$$

$$FV = \$3727.08$$

$$FV = \$3729.48$$



IWBAT practice using the formula  $B = p(1 + r)^n$  and reading compound interest tables and explore continuous compounding as an example of exponential growth.

## Banking: Compound Interest

### Compound interest table

Initial investment: \$12,000 at 10%

Frequency of compounding	5 years	10 years	15 years	20 years
Annually	\$19,326.12	\$31,124.91	\$50,126.98	\$80,730
Quarterly	\$19,663.40	\$32,220.77	\$52,797.48	\$86,514.81
Monthly	\$19,743.71	\$32,484.50	\$53,447.03	\$87,936.88
Daily	\$19,783.30	\$32,614.91	\$53,769.22	\$88,644.39

IWBAT practice using the formula  $B = p(1 + r)^n$  and reading compound interest tables and explore continuous compounding as an example of exponential growth.

## Banking: Compound Interest

### Continuous compounding

$$f(t) = Pe^{rt} \quad FV = Pe^{rt} \quad (0.04 \times 10)$$

$P = \$2,500$   
 $r = 4\%$   
 $t = 10 \text{ yr.}$

$FV = 2500e$   
 $FV = \$3729.56$

IWBAT practice using the formula  $B = p(1 + r)^n$  and reading compound interest tables and explore continuous compounding as an example of exponential growth.

## Banking: Compound Interest

TVM solver (yellow calc.)

$$P = \$2500$$

$$R = 4\%$$

$$n C = 1, 4, 12, 365$$

$$T_n = 10 \text{ yr}$$

$$1 \$ 3700.61$$

APPS - Finance - TVM Solver

$$n = 10$$

$$I\% = 4$$

$$PV = -2500$$

$$PMT = 0$$

$$FV = \boxed{0} \text{ Alpha + Enter (solve)}$$

$$P/Y = 1$$

$$C/Y = 1$$

$$PMT = \boxed{END}$$

IWBAT practice using the formula  $B = p(1 + r)^n$  and reading compound interest tables and explore continuous compounding as an example of exponential growth.

## Banking: Compound Interest

$$4\% \quad \frac{.04}{365} \quad \frac{52}{12}$$

$$\frac{4}{2} \quad \frac{1}{1}$$

Practice: 4.3.2

$$0.5362$$

$$53.6\%$$

$$FV = P \left( 1 + \frac{r}{n} \right)^{(n \cdot t)}$$

IWBAT practice using the formula  $B = p(1 + r)^n$  and reading compound interest tables and explore continuous compounding as an example of exponential growth.

**Calculate compound interest.**

Julia invested \$1,234 in 1996 in a savings account with an annual interest rate of 1.2% compounded monthly. What should her account balance be in 2018?

$I =$   
 $P = \$1234$   
 $R = 1.2\%$   
 $T = 22 \text{ y}$   
 $n = 12$   
 $FV =$

$$FV = P \left(1 + \frac{r}{n}\right)^{n \cdot t}$$

$$FV = \$1234 \left(1 + \frac{0.012}{12}\right)^{(12 \cdot 22)}$$

$$FV = \$1606.61$$

## Banking: The Rule of 72 (and 69)

## IWBAT

- understand when to use the rule of 72 versus the rule of 69
- use the inflation rate to calculate and estimate the time it takes for a person's buying power to halve.



## Banking: The Rule of 72 (and 69)

**Calculate and estimate the amount of time for an investment to double.**

✓ How long will it take \$2,500 to double at an annual interest rate of 4%? Use the TVM solver.

$$N =$$

$$I\% = 4$$

$$PV = -2500$$

$$FV = 5000$$

$$C/Y = 1$$

$$N = 17.67 \text{ y}$$

$$17 \text{ y } 8 \text{ mo}$$

$$18 \text{ y}$$

IWBAT understand when to use the rule of 72 versus the rule of 69 and use the inflation rate to calculate and estimate the time it takes for a person's buying power to halve.

## Banking: The Rule of 72 (and 69)

### Rule of 72

If you save your money in an account with annual interest rate  $r$ , you can approximate the number of years needed to double your principal by

$$\frac{72}{I\%} \quad \frac{72}{r \cdot 100}$$

This approximation works for compounding periods up to weekly. *Annually, Monthly, Semiannually, Quarterly, + Weekly*

How long will it take \$2,500 to double at an annual interest rate of 4%?

$$\frac{72}{4} = 18 \text{ y}$$

IWBAT understand when to use the rule of 72 versus the rule of 69 and use the inflation rate to calculate and estimate the time it takes for a person's buying power to halve.

## Banking: The Rule of 72 (and 69)

To have \$1,000,000 by your 60th birthday, how much do you need to invest at 6% interest at age 18? Solve using the Rule of 72.

$$\frac{72}{6\%} = 12x$$

$$\begin{array}{r} 60 \$1,000,000 \\ -12 \\ \hline 48 \$500,000 \\ -12 \\ \hline 36 \$250,000 \\ -12 \\ \hline 24 \$125,000 \\ -12 \\ \hline 12 \$62,500 \\ -12 \\ \hline 0 \$31,250 \end{array}$$

IWBAT understand when to use the rule of 72 versus the rule of 69 and use the inflation rate to calculate and estimate the time it takes for a person's buying power to halve.

## Banking: The Rule of 72 (and 69)

### Rule of 69

If you save your money in an account with annual interest rate  $r$ , you can approximate the number of years needed to double your principal by

$$\frac{69}{r\%} \quad \frac{69}{r \cdot 100}$$

Use this approximation for **daily** and **continuous** compounding.

$$\$2500 \rightarrow \$5000 \rightarrow \$10000$$

$$\frac{72}{4\%} = 17.67y, 18y$$

$$\frac{69}{4\%} = 17.25y, 17y 3mo \quad 17y 3mo$$

$$\$1 \quad \$2 \quad \$4$$

IWBAT understand when to use the rule of 72 versus the rule of 69 and use the inflation rate to calculate and estimate the time it takes for a person's buying power to halve.

## Banking: The Rule of 72 (and 69)

Inflation (reduction in buying power)

Use the Rule of 72 to calculate how long it will take for your buying power to halve with a 1.9% rate of inflation. Please answer in years and months.

$$\frac{72}{1.90} = 37.89y$$

38y

IWBAT understand when to use the rule of 72 versus the rule of 69 and use the inflation rate to calculate and estimate the time it takes for a person's buying power to halve.

## Banking: The Rule of 72 (and 69)

Practice: 4.4.2

IWBAT understand when to use the rule of 72 versus the rule of 69 and use the inflation rate to calculate and estimate the time it takes for a person's buying power to halve.

**Explain when to use the Rule of 72  
and when to use the Rule of 69.**

Rule of 72 - for compounding periods up to  
weekly

Rule of 69 - for compounding daily + continuously

Use these rules to calculate the time needed  
for our investment to double

IWBAT understand how checking accounts work,  
including interest and how to write a check.



## Banking: Checking Accounts

What is a checking account? Why use one?

A place to save money to pay bills

IWBAT understand how checking accounts work,  
including interest and how to write a check.

## Banking: Checking Accounts

**Understand the fees associated with a checking account.**

Overdraft fee

ATM

Different bank

Teller / call

Check processing

Late payments

Paper statement

Returned checks

Debit transaction

Designer card  
Designer checks

Order checks

ATM w/D

Check cashing

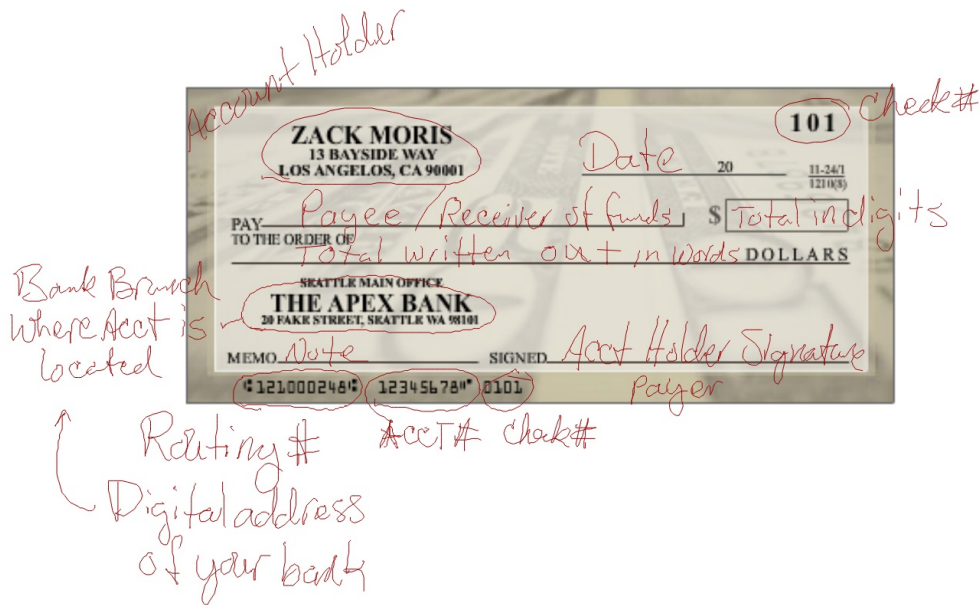
Replacement card

Check Images

IWBAT understand how checking accounts work,  
including interest and how to write a check.

## Banking: Checking Accounts

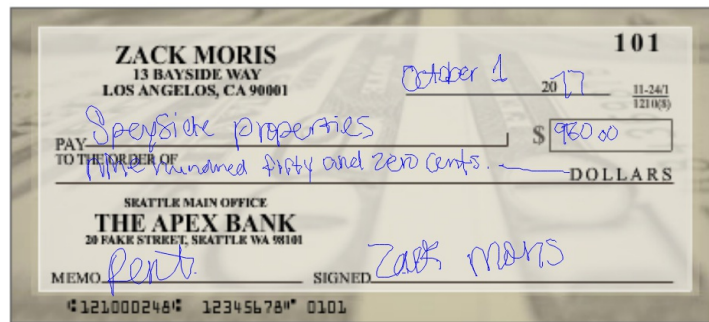
### Parts of a check



IWBAT understand how checking accounts work, including interest and how to write a check.

## Banking: Checking Accounts

Your \$950 rent is due on the first of the month to Speyside Properties. Fill out the check for next month's rent payment.



88/105

IWBAT understand how checking accounts work, including interest and how to write a check.

## Banking: Checking Accounts

### Check register

Check Number	Date	Description of Transaction	Payment/Debit (-)	Fee	Deposit/Credit (+)	Balance

Number	Date	Transaction	Withdrawal	✓	Deposit	Balance
						\$2874.26
101	10/1	Spayside property	950.00			1924.26
	10/8	FW Citir			435.28	2359.54
	10/8	ATM withdraw	100.00			2259.54
	10/8	Dragon wall Buffet	32.00			2227.54
	10/8	Cherry creek	350.50			1877.04

Record the rent check in your register.

Your previous balance was \$2874.26.

IWBAT understand how checking accounts work, including interest and how to write a check.

## Banking: Checking Accounts

### Check endorsements

your name only



**WARNING** DO NOT CASH THIS CHECK WITHOUT RECEIVING CASH FROM BANK

ENDORSE HERE

*Zack Morris*

DO NOT WRITE OR SIGN BELOW THIS LINE.

 Play

**Blank endorsement:**

In a blank endorsement, there are no instructions on the back of a check, just a signature. A check with a blank endorsement can be deposited into your account or be exchanged for cash. Blank endorsements are acceptable in business transactions. Be aware that if there are no specific instructions, the bearer of the check can take the cash.

**WARNING** DO NOT CASH THIS CHECK WITHOUT RECEIVING CASH FROM BANK

FOR DEPOSIT ONLY

ENDORSE HERE

*Zack Morris*

DO NOT WRITE OR SIGN BELOW THIS LINE.

 Play

**Restrictive endorsement:**

A restrictive endorsement explicitly states "for deposit only." This means it cannot be cashed. A restrictive endorsement is a good safety measure, especially when you ask someone to deposit a check for you (for example, in business).


**WARNING** DO NOT CASH THIS CHECK WITHOUT RECEIVING CASH FROM BANK

PAY TO THE ORDER OF

ENDORSE HERE

*Zack Morris*

DO NOT WRITE OR SIGN BELOW THIS LINE.

 Play

**Full endorsement:**

A full endorsement is signed by the person it is made to but has instructions to pay the check to someone else. For example, if you get a check for \$65 but you owe the money to your friend Pete Smith, you can sign the back of the check and write "Pay to the order of Pete Smith." To cash the check, Pete will need to sign it.

IWBAT understand how checking accounts work, including interest and how to write a check.

## Banking: Checking Accounts

### Deposit slip

DEPOSIT TO THE ACCOUNT OF  
NAME Zack Morris  
DATE 10/05/17  
903  
YOUR BANK  
DEPOSITS SUBJECT TO CORRECTION BY PROOF DEPARTMENT  
ALL ITEMS CREDITED SUBJECT TO THE FINAL PAYMENT  
ACCOUNT NUMBER  
\* 1 2 3 4 5 6 7 8  
⑆ 987654321 ⑆

PLEASE BE SURE EACH ITEM IS  
PROPERLY ENDORSED USE OTHER  
SIDE TO LIST ADDITIONAL CHECKS

☒ CASH  
50.00  
SUBTOTAL  
LESS CASH  
RECEIVED  
\$ 315.28

4	1	5	2	8
4	1	5	2	8
1	0	0	0	0
3	1	5	2	8

IWBAT understand how checking accounts work,  
including interest and how to write a check.

## Banking: Balancing your Checkbook

10/09/17

**Fill out the check register completely  
using the sample bank statement.  
Remember that things are to be entered  
chronologically.**




## Banking: Balancing your Checkbook

IWBAT reconcile a checkbook and explore some common accounting errors and how to detect them.

## Banking: Balancing your Checkbook

### Learning how to read bank statements.

 <b>FIRST BANK OF APEX</b> 1234 Main St. City, State		CHECKING ACCOUNT STATEMENT Page : 1 of 1			
		JOHN DOE 1111 Balance St. City, State		Statement period 2010-10-09 to 2010-11-08	
				Account No. 123-45-678	
Date	Description	Ref.	Debits	Credits	Balance
2010-10-08	Previous balance				.55
2010-10-14	Payroll Deposit - HOTEL			694.81	695.36
2010-10-14	Web Bill Payment - MASTERCARD	9685	200.00		495.36
2010-10-16	ATM Withdrawal - INTERAC	3990	21.25		474.11
2010-10-16	Fees - Interac		1.50		???
*** Totals ***			???	???	

101

102 \*

103

104

IWBAT reconcile a checkbook and explore some common accounting errors and how to detect them.

## Banking: Balancing your Checkbook

Reconciliation *Get your bank statement and your check register to agree*

What you need to reconcile:

1. deposits (direct deposit or otherwise)
2. interest
3. checks cleared
4. outstanding checks
5. bank fees
6. cash withdrawals
7. online bill payments
8. debit card transactions
9. transfer of funds

IWBAT reconcile a checkbook and explore some common accounting errors and how to detect them.

## Banking: Balancing your Checkbook

### Reconciling tools

#### Verifying That Two Groups of Numbers May Add Up to the Same Value

1. Add all *digits* of all the numbers in each column.
2. Do this again if needed until you reach a single digit.
3. Compare the two single digits you get in the end.

If they do not agree, then the numbers in the two columns cannot add up to the same value.

Imagine the numbers in the first column are 23, 14, and 9, and the second column contains 20 and 27. You want to know if the columns are balanced — that is, do the numbers in the first column add up to 47?

23	5	20	2	10	1	20	2
14	5	27	9	12	3	17	8
09	9		11	14	5	5	5
	19		2		9		15
	10						6
	1						

IWBAT reconcile a checkbook and explore some common accounting errors and how to detect them.

## Banking: Balancing your Checkbook

Transposed numbers *Numbers have switched places, eg. 21 + 12*

Columns should add to the same total, but do not. Subtract column sums. If the difference is divisible by 9, look for transposed numbers (e.g. 34 instead of 43).

11	11	300	300	2418	2418
42	24	150	150	2818	2818
15	15	406	604	1219	1912
<u>68</u>	<u>50</u>	<u>856</u>	<u>1054</u>	<u>6455</u>	<u>7148</u>
	18		198 18	693	18

IWBAT reconcile a checkbook and explore some common accounting errors and how to detect them.

## Banking: Balancing your Checkbook

Practice: 4.6.2

IWBAT reconcile a checkbook and explore some common accounting errors and how to detect them.

**What does it mean to reconcile your checkbook?**

*Get your bank statement and check Register to agree*

Banking: Comparing Checking Accounts

IWBAT

- understand the various fees that may be associated with a checking account
- decide whether a checking account is appropriate given a person's particular needs.

## Banking: Comparing Checking Accounts

**Compare two checking accounts based on various factors.**

- Debit card?
- Per check fee?
- ATM fee?
- Monthly service fee?
  - Minimum balance?
  - Direct deposit?
- Interest?
  - Final balance?
  - Average monthly balance?

IWBAT understand the various fees that may be associated with a checking account and decide whether a checking account is appropriate given a person's particular needs.

## Banking: Comparing Checking Accounts

Typical account features

Account Features	Basic Free Checking	Student Checking	Regular Checking	Interest Checking
ATM access	FREE ✓	FREE ✓	FREE ✓	FREE ✓
Online Bill Pay E-mail Alerts Online Check Images Online Statements	FREE ✓	FREE ✓	FREE ✓	FREE ✓
Earns Interest				YES ✓
Monthly Service Fee	None with direct deposit, or 5 or more debit card purchases during each statement period; otherwise \$6	None, must be a student 18+ years old	Waived with \$1000 minimum checking balance; otherwise \$12	Waived with \$1500 minimum checking balance; otherwise \$20
Debit Card	FREE ✓	FREE ✓	FREE ✓	FREE ✓

Fractional reserve banking -

A type of banking system in which only a fraction of bank deposits are backed by actual cash on hand. The rest of the money deposited is not available for immediate withdrawal.

IWBAT understand the various fees that may be associated with a checking account and decide whether a checking account is appropriate given a person's particular needs.



If Bank A charges a monthly service fee of \$2.50 and a per-check fee of \$0.15, while Bank B charges a monthly service fee of \$4 and a per-check fee of \$0.05, which bank will charge a customer more in fees if she writes 18 checks per month, and by how much? Is this bank ever a better choice?

## Banking: Comparing Checking Accounts

IWBAT understand the various fees that may be associated with a checking account and decide whether a checking account is appropriate given a person's particular needs.

**Explain the difference between a savings account and a checking account.**

A savings acct. is to keep your money for later and not to spend now.

A checking acct. is for accessible spending money

IWBAT

- work with APR and APY to calculate interest earned from a savings account
- perform calculations involving deposits and withdrawals.

## Banking: Savings Accounts

### APR vs. APY

**APR** is the annual percentage *rate*. It is the annual rate of interest without taking into account the number of compounding periods.

**APY** is the annual percentage *yield*. This is a measure of the full amount of money earned over a year, which includes any compound interest.

IWBAT work with APR and APY to calculate interest earned from a savings account and perform calculations involving deposits and withdrawals.

## Banking: Savings Accounts

**APY** is higher than **APR** if there is more than one compounding period in a year, so *lenders* often express their interest rates in the form of APR since it is lower. *Borrowers* (such as banks and other savings institutions) often express interest rates in APY since it is higher.

$r = \text{APR}$

$$\text{APY} = \left(1 + \frac{r}{n}\right)^n - 1$$

$$1.5\% \quad \left(1 + \frac{0.015}{250}\right)^{250} - 1 = 0.01511$$
$$1.511\%$$

IWBAT work with APR and APY to calculate interest earned from a savings account and perform calculations involving deposits and withdrawals.

## Banking: Savings Accounts

"interest calculated on an annual basis, accrued daily, and paid monthly."

7) The beginning balance of Otto's savings account for the month of May was \$1800, and it remained this way for the first 12 days of the month. On May 13, Otto made a withdrawal of \$400, so his balance changed, and it remained the same for a total of 8 days. On May 21, Otto made a deposit of \$1200, so his balance changed again, and it remained the same for a total of 11 days to finish out the month. If Otto's savings account has an APR of 7.3%, calculates interest daily, and pays interest at the end of the month, how much did Otto earn in interest in the month of May?

$$\begin{aligned} & \$800 \left[ \left( 1 + \frac{0.073}{365} \right)^{12} - 1 \right] = \$4.32 \\ & - 400 \left[ \left( 1 + \frac{0.073}{365} \right)^8 - 1 \right] = \$2.24 \\ & + 1200 \left[ \left( 1 + \frac{0.073}{365} \right)^{11} - 1 \right] = \$5.72 \end{aligned} \quad \left. \vphantom{\begin{aligned} & \$800 \left[ \left( 1 + \frac{0.073}{365} \right)^{12} - 1 \right] = \$4.32 \\ & - 400 \left[ \left( 1 + \frac{0.073}{365} \right)^8 - 1 \right] = \$2.24 \\ & + 1200 \left[ \left( 1 + \frac{0.073}{365} \right)^{11} - 1 \right] = \$5.72 \end{aligned}} \right\} = \$12.28$$

IWBAT work with APR and APY to calculate interest earned from a savings account and perform calculations involving deposits and withdrawals.

## Banking: Savings Accounts

Practice: 4.8

IWBAT work with APR and APY to calculate interest earned from a savings account and perform calculations involving deposits and withdrawals.

**What is the difference between APR and APY?**

APR is the Annual Percentage Rate

- Does NOT take into account compounding

APY is the Annual Percentage Yield

- Includes compounding

Banking: Comparing Savings Accounts

IWBAT understand how FDIC insurance works and examine various types of savings accounts based on risk and liquidity.



## Banking: Comparing Savings Accounts

### Understanding how FDIC insurance works.

The FDIC insures deposits to all types of accounts including:

- checking accounts
- basic savings account
- money market
- certificate of deposit (CD)

<https://www.fdic.gov/deposit/covered>

What is covered and how much?

Joint accts \$250,000 per account holder

Single accts \$250,000

Self-directed IRA \$250,000

---

PER BANK

## Banking: Comparing Savings Accounts

If you have \$400,000, how should you divide it up?

Or should you?

\$250K Single + \$150K SDIRA

\$400K Joint (2 ppl)

\$250K B1 + \$150K B2 single

\$250K single + \$150K Joint

## Banking: Comparing Savings Accounts

Liquidity - the ability to access cash quickly

Types of Savings Accounts

- piggy bank
- basic savings account
- money market savings
- certificate of deposit (CD)
- savings bond



Increasing  
Interest %



Increasing  
Liquidity

General rule: the higher the interest rate, the lower the liquidity

IWBAT compare two savings accounts based on various factors and examine various types of savings accounts based on risk and liquidity.

## Banking: Comparing Savings Accounts

Practice: 4.9

IWBAT compare two savings accounts based on various factors and examine various types of savings accounts based on risk and liquidity.

#### 4.10 Savings & Checking Wrap up

10/17/17

##### How does FDIC insurance work?

Bank accounts are insured for up to

per Bank { Joint accts. \$250,000 / acct. holder  
Single accts. \$250,000  
Self-directed Ret. \$250,000

in case of a bank failure.

#### Banking: Savings & Checking Wrap up

IWBAT demonstrate my proficiency in this unit on practice problems before the unit test.

## Banking: Savings & Checking Wrap up

### Complete Practice 4.10.2

Simple Interest

$$I = Prt \quad FV = P + Prt$$

Compound Interest

$$A(t) = P(1 + r/n)^{(n \cdot t)}$$

$$A(t) = P\left(1 + \frac{r}{n}\right)^{n \cdot t}$$

$$APY = (1 + r/n)^n - 1$$

$$APY = \left(1 + \frac{r}{n}\right)^n - 1$$

#4 graph on calculator + transfer to your paper

IWBAT demonstrate my proficiency in this unit on practice problems before the unit test.

## Banking: Savings & Checking Wrap up

10/18/17

### Final questions on 4.10.2?

IWBAT demonstrate proficiency on my unit test.

## Banking: Savings & Checking Wrap up

### Complete Unit Test 4.10.5

IWBAT demonstrate proficiency on my unit test.